

# ES3528M

## L2/4 Fast Ethernet Standalone Switch



### Product Overview

The Edge-Core ES3528M is a Fast Ethernet Layer 2/4 switch featuring 28 ports: 24 100BASE-TX ports and 4 combination Gigabit Ethernet RJ-45/SFP (Small Form Factor Pluggable) ports. It is ideal for Fast Ethernet desktop connectivity and wiring closet installations, where IP Clustering can be used to form a virtual stack of up to 36 switches. An entire virtual stack can be managed as a single entity using one IP address. This switch is packed with features and is a cost-effective solution that brings continuous availability, enhanced security, and advanced QoS to the network edge, while maintaining simplicity of management.

### Key Features and Benefits

#### Performance and Scalability

With 12.8 Gbps switching capacity, the ES3528M delivers wire-speed switching performance on all Gigabit ports, allowing users to take full advantage of existing high-performance Gigabit-integrated servers, PCs, and laptops by significantly improving the responsiveness of applications and file transfer times.

There are four Gigabit Ethernet combination ports for uplink flexibility, allowing copper or fiber uplinks.

#### Continuous Availability

IEEE 802.1w Rapid Spanning Tree Protocol provides a loop-free network and redundant links to the core network with rapid convergence, to ensure faster recovery from failed links, enhancing overall network stability and reliability.

IEEE 802.1s Multiple Spanning Tree Protocol runs STP per VLAN base, providing Layer 2 load sharing on redundant links.

IEEE 802.3ad Link Aggregation Control Protocol (LACP) increases bandwidth by automatically aggregating several physical links together as a logical trunk, providing load balancing and fault tolerance for uplink connections.

IGMP snooping prevents flooding of IP multicast traffic and limits bandwidth-intensive video traffic to subscribers only.

Broadcast Storm Control prevents faulty end stations from degrading overall system performance.

#### Comprehensive QoS

Four egress queues per port enables differentiated management of up to four traffic types.

Traffic is prioritized according to 802.1p and DSCP, giving optimal performance to real-time applications such as voice and video.

Asymmetric bidirectional rate-limiting, per port or per traffic class, preserves network bandwidth and allows maximum control of network resources.

#### Enhanced Security

Port Security allows access to switch ports based on MAC address, limits the total number of devices from using a switch port, and protects against MAC flooding attacks.

IEEE 802.1X port-based or MAC-based access control ensures all users are authorized before being granted access to the network. User authentication is carried out using any standard-based RADIUS server.

Access Control Lists (ACLs) can be used to restrict access to sensitive network resources by denying packets based on source and destination MAC addresses, IP addresses, and TCP/UDP ports. ACLs are hardware supported, so switching performance is not compromised.

Secure Shell (SSH) and Secure Sockets Layer (SSL/HTTPS) encrypts Telnet and web access to the switch, providing secure network management.

TACACS+/RADIUS authentication enables centralized control of the switch and prevents unauthorized users from altering the configuration of the switch.

Private VLANs isolate edge ports to ensure user privacy.

#### Simple Management

An industry-standard Command Line Interface (CLI), accessed through the console port or Telnet, provides a convenient way to configure and troubleshoot the switch. An embedded user-friendly web interface helps users quickly and simply configure the switch. Four-group RMON is supported to collect traffic statistics and run network diagnostics. The switch can also backup and restore firmware and configuration files via TFTP.

## Features

### Physical Ports

- 24 100BASE-TX ports
- 4 Combination Gigabit (RJ-45/SFP) ports
- 1 RS-232 DB-9 console port

### Performance

- Switching Capability: 12.8 Gbps
- Forwarding Rate: 9.5 Mpps
- Packet Buffer Size: 4 Mbits
- MAC Address Table: 8K

### L2 Features

Auto-negotiation of port speed and duplex mode

Flow Control:

- IEEE 802.3x for full-duplex mode
- Back Pressure for half-duplex mode

Spanning Tree Protocol:

- IEEE 802.1D Spanning Tree Protocol (STP)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- Loop Back Detection
- BPDU Guard
- BPDU Filter
- Root Guard
- Auto Edge

VLANs:

- Supports 255 IEEE 802.1Q VLANs
- Port-based VLANs
- IEEE 802.1v protocol-based VLANs
- Private VLANs
- GVRP

Link Aggregation:

- Static Trunk
- IEEE 802.3ad Link Aggregation Control Protocol
- Trunk groups: 4, Trunk links: 2~8

IGMP Snooping:

- IGMP v1/v2/v3 snooping
- IGMP Queried
- IGMP Filtering

MVR (Multicast VLAN Registration)

DHCP Option 82

DHCP Dynamic provision

Supports jumbo frames up to 10KB

G.8032

### QoS Features

Priority Queues: 4 hardware queues per port

Traffic classification based on IEEE 802.1p CoS, IP, and DSCP

Supports WRR and Strict scheduling

Bandwidth Control:

- Egress rate limiting:
  - FE: 64 Kbits/sec ~ 100 Mbits/sec
  - GE: 64 Kbits/sec ~ 1000 Mbits/sec
- Ingress rate limiting:
  - FE: 64 Kbits/sec ~ 100 Mbits/sec
  - GE: 64 Kbits/sec ~ 1000 Mbits/sec

### Security

Supports IEEE 802.1X port-based/MAC-based access control

QoS assignment

RADIUS authentication

IP Source Guard

Dynamic ARP Inspection

Link Detection

MAC filter

TACACS+ 3.0

Access Control List

SSH (v1.5/v2.0)

SSL

### Management

Switch Management:

- CLI via console port or Telnet
- Web management
- SNMP v1, v2c, v3

Firmware and Configuration:

- Dual firmware images
- Firmware upgrade via TFTP server
- Multiple configuration files
- Configuration file upload/download via TFTP server
- Auto upgrade via TFTP server

Supports RMON (groups 1, 2, 3 and 9)

Supports BOOTP, DHCP for IP address assignment

Supports SNTP

Event/Error Log/Syslog

(Optional) ECVIEW Pro is a powerful network management system that maximizes the capabilities of Edge-Core devices with:

- Topology management
- Performance management
- Configuration management
- Event management
- SNMP management

Dynamic ARP Inspection

sFlow

MAC-based mirror

ATC

Delay reload

Y.1731

802.1ag

Cable Diagnostics/TDR

### SNMP Standards

- RFC 1493 Bridge MIB
- RFC 3289 Differentiated Service MIB
- RFC 2742 SNMP Agents MIB
- RFC 2096 Forwarding Table MIB
- RFC 2933 IGMP MIB
- RFC 2233 Interface Group MIB
- RFC 2668 MAU MIB
- RFC 1213 MIB II
- RFC 2621 RADIUS Authentication Client MIB
- RFC 2819 RMON MIB
- RFC 2021 RMON II Probe Configuration Group
- RFC 2011 SNMPv2 IP MIB
- RFC 3584 SNMP Community MIB
- RFC 3411 SNMP Framework MIB
- RFC 3412 SNMP-MPD MIB
- RFC 3413 SNMP Target MIB, SNMP Notification MIB
- RFC 3414 SNMP User-Based SM MIB
- RFC 3415 SNMP View Based ACM MIB
- RFC 2013 TCP MIB
- RFC 1215 Trap
- RFC 2012 UDP MIB
- RFC 2013 TCP MIB
- RFC 1541 DHCP Client
- RFC 1112 IGMP
- RFC 2236 IGMPv2
- RFC 2618 RADIUS
- RFC 1757 RMON
- RFC 1157 SNMP
- RFC 2571 SNMPv2
- RFC 2030 SNTP
- RFC 1350 TFTP
- TACACS Authentication Client MIB
- Private MIB
- Quality of Service MIB

## Features

### Electromagnetic Compatibility

CE Mark  
FCC Class A  
VCCI Class A  
CISPR Class A

### Environmental Specifications

Temperature:  
■ IEC 68-2-14  
■ 0°C to 45°C(standard operating)  
■ -40°C to 70°C (non-operating)  
Humidity: 10% to 90% (non-condensing)  
Vibration: IEC 68-2-36, IEC 68-2-6  
Shock: IEC 68-2-29  
Drop: IEC 68-2-32

### IEEE Standards

IEEE 802.1D Spanning Tree Protocol and traffic priorities  
IEEE 802.1w Rapid Spanning Tree Protocol  
IEEE 802.1p Priority tags  
IEEE 802.1Q VLAN  
IEEE 802.1v Protocol-based VLANs  
IEEE 802.1x Port authentication  
IEEE 802.3-2005  
Ethernet, Fast Ethernet, and Gigabit Ethernet  
Full-Duplex flow control  
Link Aggregation Control Protocol  
IEEE 802.3ac VLAN tagging

### Mechanical

Dimensions (H x W x D): 4.3 x 44 x 17.1 cm (1.69 x 17.32 x 6.73 in ) (1RU)  
LED Indicators: Port, Uplink, System, Diagnostic  
Weight: 2 kg (4.4 lbs)

### Safety

CSA/NRTL (UL1950, CSA 22.2.9.50)  
TUV/GS (EN60950)

### Warranty

Please check [www.edge-core.com](http://www.edge-core.com) for the warranty terms in your country.

### For More Information

To find out more about Edge-Core Networks products and solutions, visit [www.edge-core.com](http://www.edge-core.com)

### About Edge-Core Networks

Edge-Core Networks is in the business of providing innovative network solutions. In the service provider network, in the data center or in the cloud, Edge-Core Networks delivers the software and systems that transform the way the world connects. Edge-Core Networks serves customers and partners worldwide. Additional information can be found at [www.edge-core.com](http://www.edge-core.com).

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## Ordering Information

### Optional Accessories

Pluggable Optics  
ET3201-FXP

ET3201-FX20  
ET4201-SX  
ET4201-LX  
ET4201-LHX  
ET4201-ZX

Network Management System

### Product Description

Small Form Factor Pluggable (100BASE-FX; Multi Mode; Distance: 2 km; Wavelength:1310 nm)  
Small Form Factor Pluggable (100BASE-FX; Distance: 20 km; Wavelength: 1310 nm)  
Small Form Factor Pluggable (1000BASE-SX; Distance: 500 m; Wavelength: 850 nm)  
Small Form Factor Pluggable (1000BASE-SX; Distance: 10 km; Wavelength: 1310 nm)  
Small Form Factor Pluggable (1000BASE-SX; Distance: 40 km; Wavelength: 1310 nm)  
Small Form Factor Pluggable (1000BASE-SX; Distance: 80 km; Wavelength: 1550 nm)

ECView Pro Network Management Software